

# Stepwise Implementation of Vaginal Cleansing and Azithromycin at Cesarean Delivery to Decrease Postoperative Infections; A Quality Improvement Study

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## Problem Definition

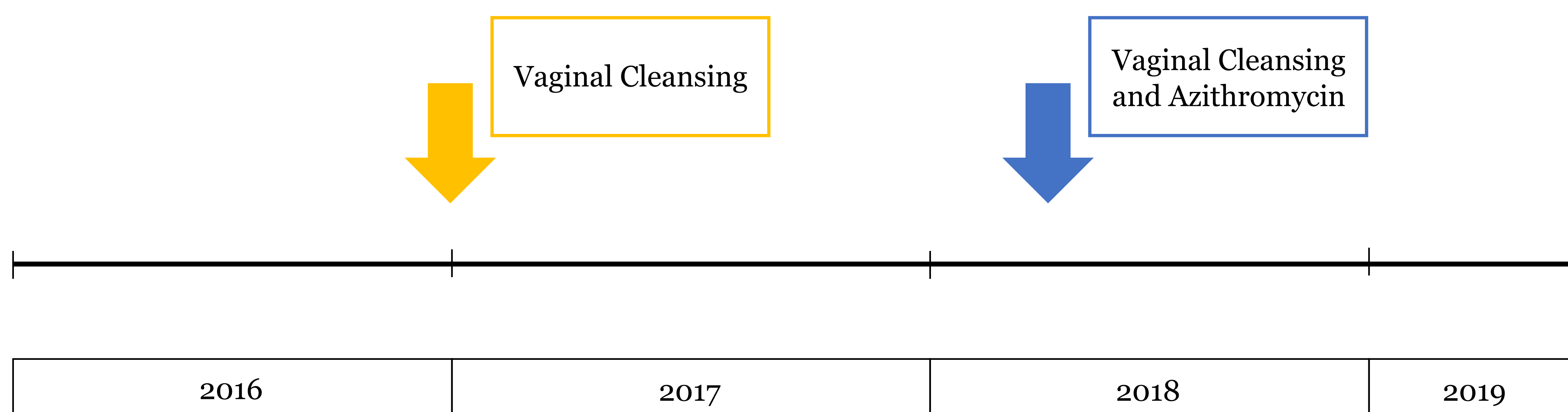
- Cesarean deliveries (CD) account for 1/3 of all deliveries
- Surgical site infections (SSI) are significantly more common after CD if a woman has been in labor or had ruptured membranes prior to delivery
- Treatment may require intravenous antibiotic administration, prolonged hospital stay, and carries a risk of sepsis or abscess formation

## Aims for Improvement

We aimed to decrease our SSI rate by 30% by sequential implementation of vaginal cleansing<sup>1,2</sup> and azithromycin<sup>3</sup> for women who underwent a CD after having labored or experienced rupture of membranes.

## Intervention

- Three study time periods:
  - 1). 12 months prior to implementation of either intervention
  - 2). 14 months of vaginal cleansing as infection prophylaxis
  - 3). 16 months of vaginal cleansing and azithromycin as infection prophylaxis



## Measurement and Results

Table 1: Patient Demographics

	Pre-intervention (n=291)	Vaginal Cleansing Only (n=335)	Vaginal Cleansing and Azithromycin (n=407)	p-Value
Ave Age (yrs)	29.6±6.1	30.2±5.9	30.2±5.7	0.3
Race				0.8
African American	116 (40%)	140 (42%)	174 (43%)	
Asian	39 (13%)	44 (13%)	45 (11%)	
Caucasian	91 (31%)	110 (33%)	120 (30%)	
Other/ unknown	45 (15%)	39 (12%)	54 (13%)	
Avg Parity (term and preterm)	0.6±1.0	0.7±1.3	0.6±1.0	0.5
Smoking at any time during pregnancy	33 (11%)	48 (14%)	40 (10%)	0.15
Pre-gestational DM	11 (4%)	19 (6%)	14 (3%)	0.3
Gestational DM	22 (8%)	35 (10%)	39 (10%)	0.4
HIV	1 (0%)	2 (0%)	1 (0%)	0.7
Avg GA at delivery	38.7±2.9	38.5±3.0	38.6±2.6	0.7
GBS Positive	98 (34%)	95 (28%)	103 (25%)	<0.0001
Chorioamnionitis	62 (21%)	74 (23%)	68 (17%)	0.1

Numbers expressed in n/total N(%)  
DM, diabetes mellitus; GA, gestational age; HIV, human immunodeficiency virus

## Measurement and Results, continued

Figure 1: A. Control chart primary outcome, any surgical site infections as defined by CDC. B. Compliance rate of vaginal cleansing. C. Compliance rate of azithromycin

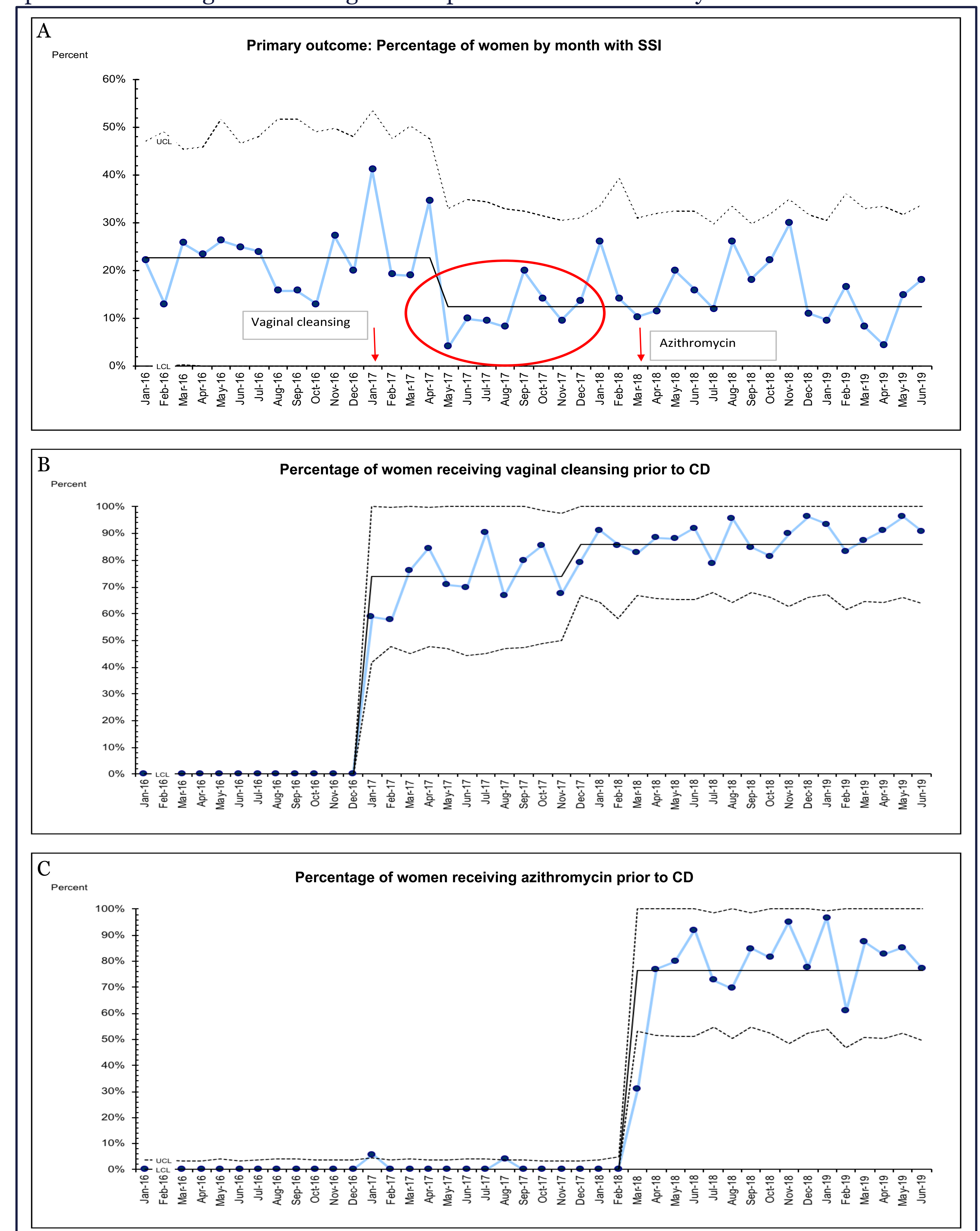


Table 2: Secondary outcomes

	Standard Care (n=291)	Vaginal Cleansing Only (n=335)	Vaginal Cleansing and Azithromycin (n=407)	p-Value
Length of postpartum stay	3.5±1.4	3.5±1.5	3.2±0.8	0.001
Postop ED visit	12 (4%)	19 (6%)	26 (6%)	0.4
Office evaluation for infection	27 (9%)	24 (7%)	33 (8%)	0.6
Readmissions for infection	10 (3%)	13 (4%)	9 (2%)	0.4
Treated as outpatients	18 (6%)	18 (5%)	15 (4%)	0.2
Treated as inpatients	10 (3%)	10 (3%)	8 (2%)	0.4

Numbers expressed in n/total N(%)  
ED, emergency department

## Next Steps

- The introduction of vaginal cleansing decreased the SSI rate by 33%, from 22.8% to 15.2%
- The addition of azithromycin did not further lower that rate
- Next steps: examine timing of azithromycin administration in relation to skin incision as well as the effect of postoperative oral antibiotics in obese patients

## References

1. Haas DM, Morgan S, Contreras K. Vaginal preparation with antiseptic solution before cesarean section for preventing postoperative infections. Cochrane Database Syst Rev. 2014 Dec 21;(12):CD007892.
2. Tita A, Szychowski JM, Boggess K et al. Adjunctive azithromycin prophylaxis for cesarean delivery. New Eng J Med. 2016. 375;1231-41.
3. Tran TS, Jamulitrat S, Chongsuvivatwong V, Geater A. Risk Factors for Postcesarean Surgical Site Infection. Obstet Gynecol. March 2000. 95(3):367-37